

**ECOSYSTEM  
RESTORATION WORK  
GROUP STATUS**

**E - 0 1 3 3 9 4**

**E-013394**

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## **BDAC Ecosystem Restoration Work Group Status Report**

### **Introduction/Background**

#### **Purpose and Need for Work Group**

Early in the alternative development and review process a need became apparent to address several major issues that are key to the development and refinement of the program alternatives. To effectively develop an Ecosystem Restoration Strategy for the CALFED Bay-Delta Program, several key policy issues needed to be examined and analyzed by a group comprised of stakeholder and agency interests. A small, focused Work Group was formulated to address these issues. The BDAC Ecosystem Restoration Work Group was established in March 1996 by the BDAC Chair, Mike Madigan, and Mary Selkirk was appointed to chair the Work Group.

#### **Mission and Goals**

The Ecosystem Restoration Work Group (ERWG) functions as a smaller, more focused, fact-finding body to BDAC to develop policy options related to ecosystem restoration and to clarify strengths and weaknesses of options. The group's objective is to identify and analyze relevant issues and facts, and as appropriate produce summaries of findings for consideration by the full BDAC. Topics identified for the group to address include:

- ecosystem restoration goals and a comprehensive strategy to restore critical ecosystem structure and function;
- adaptive management strategy development;
- institutional assurances/structures needed to ensure restoration of ecosystem health; and
- reference levels for restoring a healthy condition in the Delta; target indicators (both for key species and ecosystem functions); and scientific and historical information needed to develop restoration goals.

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## **Membership and Participation**

BDAC members who also serve as Work Group members are Mary Selkirk (Chair), Bob Raab, Ann Notthoff, Stu Pyle, Tib Belza, Pat McCarty, and Lee Lehman. CALFED Bay-Delta Program staff Dick Daniel and Sharon Gross serve as coordinators for the Work Group. In addition, the Work Group invites participation from stakeholders and CALFED agency staff, whose participation varies depending on the issues and subjects being discussed. Current invited participants to the BDAC Ecosystem Restoration Work Group include: Nat Bingham, Gary Bobker, Pete Chadwick, Cindy Darling, Rod Fujita, Kate Hansel, Chuck Hansen, Bruce Herbold, Jeff Jaraczski, Pete Rhoads, Sally Shanks, Frank Wernette, and Tom Zuckerman.

## **Operating Procedures**

The CALFED staff coordinators work with the Work Group chair to develop agendas and conduct meetings. The original intent was to limit Work Group members and invited participants to approximately 15 persons in order to preserve the small working group environment, however, the ERWG is somewhat larger due to the broader nature of the issues involved. All BDAC members are welcome to attend all the meetings whether they are appointed members or not and all meetings are open to the public with time set aside at each meeting for public comment.

All materials developed by the ERWG are fact-finding in nature. Participants in the ERWG do not vote on any issue, nor does the ERWG itself makes any decisions. Issues are developed, discussed and analyzed, and any options or recommendations developed by the ERWG are summarized in a single report, or reports, and provided to the full BDAC for deliberation.

## **Major Issues**

### **Issues from BDAC Discussions**

At the March 20 meeting of the full BDAC, a presentation was made summarizing some of the major issues that were considered key in the development and refinement of the alternatives. Several of these issues were considered important and sufficiently developed to establish BDAC Work Groups to begin a more in-depth discussion and analysis.

The issues surrounding the development of an effective ecosystem restoration program focused mainly on how to ensure that the proposed actions would meet the goal of restoring

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ecosystem health. Following is a synopsis of activities discussed and considered critical by BDAC members in the development of an ecosystem restoration program.

- Develop and define indicators of ecological health;
- Develop an ecosystem restoration strategy to coordinate restoration activities;
- Develop and define specific measurable criteria to ensure goals are met; Provide a sufficient quantity and quality of habitat restoration to meet recovery requirements;
- Address flows and timing of flows in the restoration strategy;
- Develop targets for indicators of ecological health that will serve as specific, quantitative ecosystem restoration goals and as triggers for remedial action if not met;
- Develop a vision for ecosystem restoration based on key resource goals and indicator targets.
- Articulate what a natural system looks and functions like;
- Identify the tradeoffs between protecting natural species and managing exotics; and
- Define the relationship between the ecosystem restoration program and CVPIA, considering specific goals that have already been adopted;
- Implement the strategy;
- Use adaptive management measures to meet goals and targets;
- Integrate monitoring and research into adaptive management;;
- Translate indicators, trends, and other scientific information into terms that can be understood by the general public.

Many of these issues are currently being discussed by the ERWG, however, some will be addressed at a later time.

### **Issues from Work Group Discussions**

The first meeting of the ERWG was held on April 22 and four subsequent meetings have been held (May 20, June 26, July 24, and August 28). Following is a list of issues that have been raised and discussed at the ERWG meetings to date. These issues are categorized and summarized to follow the primary objectives as stated in the mission and goals section and focus on three key topics:

- the Ecosystem Restoration Strategy;
- a process for establishing appropriate targets and goals; and
- an Adaptive Management Program.

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## *Ecosystem Restoration Strategy*

An Ecosystem Restoration Strategy was developed by the CALFED staff to provide a framework for the development of the Ecosystem Restoration Common Program incorporated into all the alternatives. The primary objectives of the CALFED strategy for ecosystem restoration is to define limiting factors (or stressors), use natural processes to restore ecological functions, increase system and population resilience, provide multiple benefits with actions, measure the results of actions, and compensate for unavoidable side effects.

The ERWG was asked to review the Ecosystem Restoration Strategy to ensure that CALFED staff had accurately and effectively incorporated those elements necessary to provide a foundation or framework to develop a comprehensive common program for Ecosystem Restoration. The most recent version of the Ecosystem Restoration Strategy is attached (Attachment 1).

Several meetings were devoted to explaining and discussing both the vision and strategy for ecosystem restoration, and resulted in significant changes to the strategy as summarized in the next several paragraphs.

Some of the early discussions about the CALFED Ecosystem Restoration Strategy included the concern that the vision for a healthy Bay-Delta ecosystem was not ambitious enough to assure that a healthy ecosystem could be restored. While the vision contains some details describing the attributes of a healthy ecosystem there was a concern that a more explicit quantitative vision was needed. This concern will be more adequately addressed during the goals and targets setting process and in the development of assurances.

Other discussions focussed on the need to expand our vision and to place more emphasis on restoration for wildlife in the overall strategy. Although CALFED has maintained that wildlife are indeed as important as the aquatic community, that message was not sufficiently conveyed in the strategy. Also relating to wildlife, was the concern for redirected impacts to some wildlife communities in conversion of one habitat type to another. Specifically, there was concern about the recommendations to convert existing habitat to tidal action and the subsequent loss of productivity that may occur as a result of that action. While it was generally agreed that restoration of tidal marshes was critical to restore the health of the ecosystem, it was agreed that these issues will need to be worked out as the ecosystem restoration program is developed to ensure that no net loss to existing wildlife values occurs as we restore habitats for other ecosystem components. Another issue was the relative importance of some agricultural land uses (especially in the Delta) to wildlife. There was a suggestion that this importance be recognized and that land uses supporting wildlife be encouraged to continue.

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It was generally agreed that restoration actions should focus on ecological functions and less on individual species and populations. However, due to limitations in our current understanding of very complex ecosystems in the basin, ecological indicators such as the abundance of species will be used as proxies for key ecological functions. There was substantial discussion at earlier meetings about the strengths and weaknesses of using a limiting factors approach and how to incorporate what is known about limiting factors and address what is not known. The group discussed whether the strategy should focus on those factors that are limiting population growth or focus on restoring the ecological functions necessary for a healthy system. An analysis of historical conditions was suggested as a way to develop goals for ecological functions. It was agreed that both approaches were important and it would be necessary to balance both in developing a restoration program. The focus will be on limiting factors that impair specific ecosystem functions that may prevent us from attaining our vision and objectives. A table was created as part of the Ecosystem Restoration Strategy to summarize existing information about limiting factors and ecological functions.

Another issue that was discussed in detail and was of concern to many Work Group members was the need for an institutional process to ensure that ecosystem restoration could be carried out. Discussions focused on identifying institutions that could undertake monitoring and research programs, as well as the mechanisms for CALFED to adjust the program based on results of monitoring and research.

### *Setting Goals and Targets*

Several meetings included discussions focused on the need and the process for setting visionary, yet realistic goals and targets for ecosystem restoration. These goals and targets focused on both the functional level of the ecosystem and the population and species level. Three alternatives for setting targets were suggested by Work Group members and presentations and discussions were held on each. The first suggested examining historical predisturbance conditions and setting targets at some level (e.g. 25 % of historical) using historical conditions as a reference. The second focussed on developing diagnostic goals, i.e., goals that define what you want the ecosystem to do that it is not doing now. Diagnostic goals should focus on several key ecosystem functions that are critical to fish productions such as migration success, floodplain inundation, and habitat complexity and availability. Diagnostic goals can be managed using adaptive management and different arrays of actions can be prescribed depending on alternative. The third alternative suggested examining more recent historical reference periods when populations were robust and set goals based on those levels. .

During the discussion of the alternative ways for developing targets it was determined that both long and short term goals would be necessary to implement the strategy and develop

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broader system wide goals. The near term focus should be on recovery of those ESA species, especially the estuary-dependent species, and those functions that are limiting them. There was some concern about using historical conditions to set targets, because so much of the physical habitat has been altered beyond the capacity to restore it to its original condition. However, a review of historical conditions would provide insight into the historical functions that were available to support the populations. This information will be useful in setting targets for functions capable of supporting a healthy ecosystem. Concerns about using a specific reference period include difficulty in selecting a reference period (the late 60's and early 70's were fine target level for many populations; however, that was a wet period).

It was clear from the discussions that considerable work needs to be done and that indicators and targets for the program need further development. The present targets in the plan can be viewed as placeholders until more definitive numbers can be developed. Concern was expressed about setting targets using population levels or specific species. Many in the group felt that this was not necessarily valid because of factors limiting populations that we know nothing about or can't control (e.g. El Nino). We should focus more on system functions and less on populations; the system is broken from a trophic perspective. A general agreement is that goals should be to restore features, such as habitat, that would eventually lead to population improvement; population numbers are simply indicators of performance toward meeting our goals. Even population numbers need to be used with caution for indicators, because many populations are strongly influenced by factors outside our control (e.g. waterfowl spending much of their lives and being influenced by factors outside of the basin).

The CALFED staff are developing some targets using a hybrid of the various approaches (i.e. reference period, historical, or predisturbance) to set targets. This should allow us to set a new target range based on detailed analysis. Targets may be set based on a combination of approaches, with the approach of greatest pertinence providing the focus or greatest weight. Such weighing would depend on how "healthful" the various targets would be.

### ***Adaptive Management***

As the Ecosystem Restoration Strategy was reviewed and revised, more emphasis has fallen on the adaptive management. The CALFED Staff is developing an Adaptive Management strategy for Ecosystem Restoration that describes adaptive management, the benefits of adaptive management, the drawbacks, its applicability to the CALFED ecosystem restoration program, and what is necessary to make it work. An adaptive management program is an oversight process that evaluates and adjusts a program's actions based on research and monitoring results. A major discussion item was the need to develop an administrative structure or the institutional requirements that would allow us to implement adaptive management. Concerns were expressed as to whether individual agencies could conduct such a program without overall guidance and

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changes relating to more effective. The law and the regulatory community may not be adaptive enough.

How targets and goals should be used in adaptive management has been a major discussion topic. Goals should be set for key resources and targets should be set for indicators. Actions and implementation levels will be set to achieve goals. Monitoring of indicators will be conducted to ensure targets are being met. Adaptive management will be there to adjust actions and implementation levels as needed to meet goals. Most members felt that in order for adaptive ecosystem management to be accepted, goals should be fixed and targets and actions should be altered as needed to meet goals.

Experience from an existing adaptive management program case study suggests that developing hypotheses on issues is important and that adaptive management should be used to test hypotheses. If a hypothesis proves correct, actions are expanded. If a hypothesis proves incorrect, a new hypothesis is developed based on the information learned and a revised or new action is adopted to meet goals. Setting targets provides assurances that we have set our goals high enough and adaptive management provides the mechanism to ensure that they are realistic.

Work Group members felt that looking at case studies of adaptive management would be helpful in providing a better understanding of its applicability to the CALFED program. Two speakers provided presentations concerning adaptive management; one discussing how it might be applied and the other how an adaptive management program was developed and is being used. Individual projects in Category III could be utilized to help set priorities for adaptive management and to test certain hypothesis.

## **Options for Addressing Issues or Recommendations to BDAC**

In addressing some of the major issues that the BDAC Work Group has discussed, several activities are underway or being planned. An effort is currently being coordinated to develop a list of key resources (species, ecological functions and stressors) for which targets should be formulated. A spectrum of unhealthy to healthy will be developed for each resources utilizing existing and historical data. Utilizing a hybrid of the three options for setting goals that the BDAC Work Group discussed, ranges for targets and goals will be developed. Expertise will be drawn from both agencies and stakeholders and technical working sessions will help refine this information. BDAC Work Groups will assist in providing opportunities for discussions and revisions to the list of resources and the targets.

A focused workshop on targets will be held this fall and a paper on targets will be distributed in early October of this year.



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## Next Steps

The BDAC Ecosystem Restoration Work Group will continue to meet monthly throughout the remainder of 1996. Scheduled meeting dates are September 24, 1996 (9 am to 12 noon); October 24, 1996 (9 am to 12 noon); and November 26, 1996 (9 am to 12 noon). It is anticipated that we will continue refining the Adaptive Management Program, discuss targets and goals, and identify needed assurances. The Work Group will provide essential policy review and direction throughout the development of the Ecosystem Restoration Component refined process in the coming months.